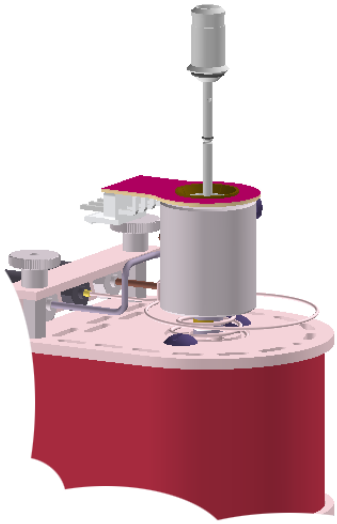


Pyrolyzer Module for TDU

Specifications

Uses

The Pyrolyzer module for the GERSTEL Thermal Desorption Unit (TDU) enables pyrolysis of solid or liquid samples at temperatures up to 1000 °C, for example for structural elucidation of polymers. Prior to pyrolysis a thermal desorption step can be performed in order to determine volatile compounds in the sample and to make the ensuing pyrolysis chromatogram cleaner and easier to interpret. Pyrolysis break-down products can be transferred to the GC/MS system using an intermediate cryofocusing step to facilitate determination of volatile break-down products and for trace level analysis.

Temperature Program

- Standard pulsed pyrolysis at maximum heating rate or
- Programmed temperature ramp at a heating rate from 0.02 … 100 °C/s
- Pyrolysis temperature 350 … 1000 °C
- Pyrolysis time max. 1 min
- Uniform temperature profile due to optimized heat transfer

Sample types

- Suitable for solid and liquid samples
- Sample volume max. 10 µL for liquid samples, max. 1 mg recommended for solid samples
- Automated pyrolysis of up to 98 samples in one batch

Pyrolysis Tubes

- Quartz glass
- ID 1.9 mm
- Open or closed at the bottom, with or without side opening
- Can be filled with quartz wool

Control

- Based on the controller C506 and the GERSTEL MAESTRO software
- Fully integrated in the Agilent® Technologies ChemStation or GC/MS MassHunter software
- Thermo Fisher Xcalibur software sequence table integration
- GC run start can be linked to the sample introduction into the TDU
- Cryo focusing in the CIS possible for pyrolysis-based trace level analysis
- Thermal desorption and pyrolysis can be performed consecutively on a sample resulting in two separate GC runs
- Multiple thermal desorptions or sequential thermal desorption and pyrolysis can be defined for each sample

System Requirements

- Multi Purpose Sampler GERSTEL MPS S/N 121953 or higher firmware version 4.1.3 or higher
- Thermal Desorption Unit TDU
- Coold Injection System CIS 4 or CIS 6
- Controller C506
- GERSTEL MAESTRO software 1.4 or higher
- Gripper for metal transport adapters, 5-ball-version
- Universal syringe holder version 2
- Adjustable tray holder
- Wash station with 5 positions

Custom Solutions for special performance requirements available on request.

Technical Changes Reserved. 03-062011

Pyrolyzer Module for TDU

Extensions and Options

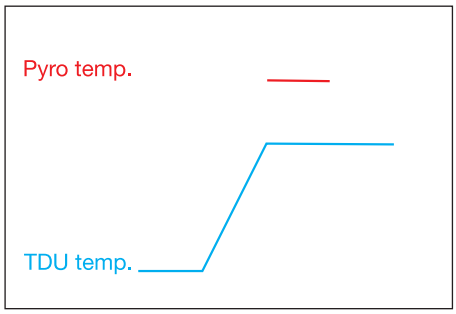
- Cryo Trap System CTS 2
  for on-column cryo focusing in order to obtain sharper peaks with volatile analytes
- Backflush Option
  to protect the column by removing high-boiling residue without lengthy temperature programs and for efficient solvent venting

Operating Conditions

- 15 … 35 °C
- Relative humidity max. 50-60 %, non-condensing
- Max. 4615 m above sea level

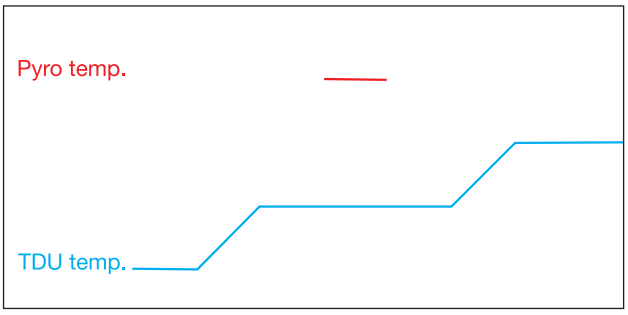
Modes of Operation

Pulsed Pyrolysis



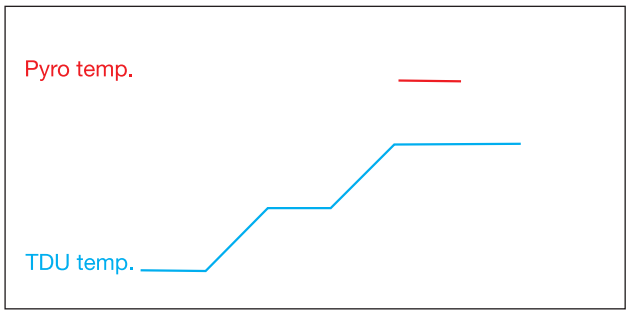
- TDU method with one temperature ramp
- Pyrolysis during the TDU temperature hold time
- Cryo focusing in the CIS or hot split analyte transfer

Derivatisation and Pulsed Pyrolysis



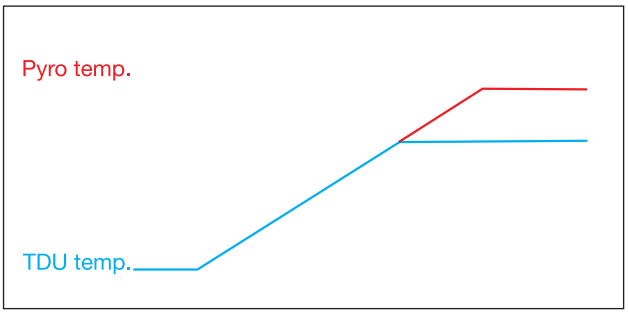
- TDU method with two temperature ramps
- Pyrolysis during the first TDU temperature hold time
- Cryo focusing in the CIS or hot split analyte transfer

Solvent Venting with Pulsed Pyrolysis



- TDU method with two temperature ramps, solvent venting during the first TDU holding time
- Pyrolysis during the second TDU temperature hold time
- Cryo focusing in the CIS or hot split analyte transfer

TGA Simulation



- TDU with one temperature ramp
- Pyrolysis temperature ramp directly after the TDU temperature ramp at the same heating rate
- Hot split analyte transfer

GERSTEL GmbH & Co. KG, Deutschland
gerstel@gerstel.de • www.gerstel.de
+49 208-7 65 03-0

GERSTEL AG, Schweiz
gerstel@ch.gerstel.com • www.gerstel.de
+41 41-9 21 97 23

GERSTEL Inc., USA
sales@gerstelus.com • www.gerstelus.com
+1 410-247 5885

GERSTEL Brasil
gerstel@gerstel.com • www.gerstel.com.br
+55 11-5665 8931

GERSTEL K.K., Japan
info@gerstel.co.jp • www.gerstel.co.jp
+81 3 5731 5321

GERSTEL LLP, Singapur
sea@gerstel.com • www.gerstel.com
+65 6622 5486